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COCA CULTURE.

Gathering Coca Leaves.

Coat-of-arms of Peru.

COCA has been known outside of South America since about 1550, but until 1884, when Koller, then a medical student in Vienna, announced the result of experiments upon the anæsthetic effect of the muriate of cocaine, little use was made of its properties as a remedy. In 1860 Niemann had spoken of its benumbing influence upon the mucous membrane of the tongue; but no practical result followed, and the only trials made of the drug were with reference to its capacity for enabling the user to withstand fatigue or the exertion of mountain-climbing. The accounts given by travellers in South America of the remarkable endurance of fatigue and fasting by those who chew the leaf did not receive general credence; and not long before Koller's discovery became public, Dr. Christison and others made a series of trials of mountain-climbing with a view to verifying these reports, which resulted in their favor.

The study of coca made by Dr. Henry H. Rusby, of New York, during a journey in South America, which was narrated in the *Therapeutic Gazette* in 1886, indicates that the effects of the chewing of the fresh leaf and of the administration of salts of cocaine are not altogether similar, and that the leaf which is most esteemed for its richness in cocaine is not the one most sought for by the chewer.

Passing by the description of the plant and any further reference to its uses, we will refer here to some facts of interest respecting its production. Unlike so many other vegetable products of South America, coca is, and, so far as known, has always been, the result of culture. We have accounts of the existence of wild coca shrubs in limited regions of the Andes, but they furnish no leaves to commerce. Peru and Bolivia furnish the greater supply, but the Argentine Republic, Ecuador, and Colombia also

produce it abundantly. In Peru the valleys of the Carabaya region are largely devoted to it, especially the valley of Ituta. Its importance as a product has led to the plant being represented, since 1825, in the Peruvian coat-of-arms (as shown in the initial letter). It is grown from seed, and rarely attains to great height, its aspect being that of a bush rather than that of a tree. It commences to yield merchantable leaves two years after the seeds are planted, and bears two or three crops annually, or, when irrigated during the dry season, four or five. The alkaloidal strength (according to Rusby) is at a maximum at about the tenth year, and declines slowly after about the twentieth, owing probably to exhaustion of the soil for want of artificial fertilizing. Its cultivation in South America is generally restricted to an altitude of 2,000 to 6,000 feet, the natives preferring that produced at the higher elevations. It demands an abundance of moisture, and, whether rightly or not, the native cultivators consider it essential to shade it from the direct sunlight, at least during its early growth. The soil is pulverized to a depth of two or three feet, and the stones which are extracted are used for the construction of retaining walls for the terraces upon which the shrubs are grown on hillsides. Upon level surfaces the plants are placed at the bottom of furrows, the soil from which is arranged in mounds between the rows, thus affording the shade considered desirable and retarding evaporation.

The gathering of the leaves is done chiefly by women and children, and the leaves are plucked one by one and with care to avoid breaking the small twigs. They are placed in a cloth or apron attached to the waist and gathered into a pouch. As soon as possible they are spread upon large woollen sheets or a stone pavement and exposed to the sun to dry. With occasional turning they are dried, under favorable conditions, in about three hours, and are then packed in bags or bales. During the drying process they are guarded from moisture, and on the appearance of indications of rain they are quickly swept under sheds with which the drying floor is surrounded.

With regard to the best mode of packing coca for market, Dr. Rusby says that he has made a number of experiments, without arriving at a method which will insure preservation, and that "it is fair to say that nothing definite is known. Such coca as has reached Europe or the United States in good condition has done so purely by accident, for perhaps the very next lot, dried, packed, and shipped as nearly as possible in the same manner, has arrived entirely ruined." When put into bags made of the sheath of the banana leaf, the package (called a *cesto*) contains about twenty-four pounds. A *tambor* is a bale about double the size of a *cesto*. Occasionally two tambors are closely soldered in tin or zinc enclosed in wood, which protects them from dampness which rapidly destroys their value. Although shipped from many ports along the western coast, Salaverry, in Peru (the port of entry to Truxillo), and Arica, in Bolivia, are the chief.

Coca and Cocaine.

AT the recent fiftieth anniversary of the Pharmaceutical Society of Great Britain, Dr. Otto Hesse (who was, most fittingly, made the recipient of the Hanbury medal) communicated an important paper entitled "A Study of Coca Leaves and their Alkaloids," from which we take the portions relating to the leaves themselves and to the alkaloid cocaine.

I. COCA LEAVES.

The increased interest aroused in hydrochloride of cocaine some years since caused the manufacture of this compound to be undertaken in many different quarters, but the resulting preparations not infrequently differed considerably in composition and formula from the body described and investigated by Lossen.* This unsatisfactory state of things induced me at the time, as I was occupied with the preparation of this and other compounds of cocaine, to undertake a more detailed investigation of the whole subject.

Although the circumstances referred to have assumed a more favorable aspect in recent years, only a very pure hydrochloride of cocaine finding acceptance in commerce at the present time, yet I think that some of the recorded observations should not be withheld from publication, since in many respects they rectify and supplement existing information upon the subject, and also afford an opportunity for an exact comparison of cocaine with other basic constituents of coca.

Before, however, entering into details, I may be allowed to communicate a few facts concerning coca leaves that will impart a better general acquaintance with the subject.

It is worthy of note that Niemann * selected the broad-leaved coca for investigation. This material was derived from the *Erythroxylon Coca* Lamarck, a shrubby plant indigenous to the country east of the Andes, from Southern Colombia to the Argentine Republic, and much cultivated on the yungas of Peru and Bolivia. Indeed, it is from the latter countries that the supplies of coca for the market have been principally drawn.

In Peru and Bolivia the coca leaves are picked thrice yearly, viz., in spring, summer, and autumn, and on the last gathering the coca plant is completely stripped of its leaves. The coca leaves are dried as quickly as possible in the sun, and then either packed in banana leaves as "tambor" or "drum" (bundles weighing about 18 kilos), which are further fastened together to form bales about 70 kilos in weight, or at once packed into bales from 45 to 70 kilos in weight. These large bales are transported by mules and other beasts of burden hundreds of English miles through the Andes to the different ports of Bolivia and Peru, from whence they are exported to Europe and North America. The coca harvested in Bolivia is exported principally from Arica and Mollendo, the supply from Southern Peru is exported via Lima, and that from Northern Peru via Salvaverry, the port of Trujillo, or Truxillo. The marks of the coca, however, correspond less to the places of export than to the districts in which the coca has been cultivated, or to the places in which the respective commercial houses have their headquarters, so that in the market not only "Lima coca," but also "Huanuko coca," "Cusco coca," "Trujillo coca," etc., are distinctive terms. With the exception of "Trujillo coca," all these varieties are identical in appearance with the coca investigated by Niemann. The Trujillo coca, which is obtained from the province Trujillo, and also apparently from more northerly districts in Ecuador and Colombia, differs from the above in that the leaves are brightly colored, narrower, less leathery, extremely thin, and therefore very fragile. On this account the Trujillo, or Truxillo,† coca of commerce consists almost entirely of fragments of leaves. The origin of this coca is attributed to a variety of the above-named plant, viz., *Erythroxylon Coca*, var. *Novagranatense* Dyer.

Besides these two varieties of coca a third sort came temporarily into the market, which occupied an intermediate position between both the previous kinds in size of leaf, but the leaves were very leathery and well preserved. This sort, which was principally sent to Paris, I have erroneously attributed to Trujillo in a previous communication,‡ but this assumption does not accord with subsequent information.

In view of the therapeutical interest attached to the drug, it has been deemed advisable to cultivate the coca plant in other places as well as South America. Such attempts have been made in the East Indies, in Ceylon, Java, etc. According to Warden § the coca plants flourish in the cinchona plantations of Madras and in the tea plantations of Bengal, and yield a leaf containing from 0.358 to 1.671 per cent alkaloid. In Ceylon, where the plants have been distributed from the Peradeniya Gardens, a leaf obtains which is certainly rich in alkaloid, but the base frequently consists principally of cinnamylecgonine methyl ester. The culture in Java is still less satisfactory, although here also the leaf often contains considerable quantities of alkaloid. In all these latter kinds of coca leaves the alkaloids accompanying cocaine preponderate, and it is moreover said that they are partly derived from a new variety of coca. Burck ‖

* Annalen, 133, 351.

* Annalen, 121, 372.
† Since the name Trujillo is more frequently met with than Truxillo, I prefer to employ the former spelling.
‡ Berichte der deutsch. chem. Ges., xxii., 666.
§ Pharm. Journ., [3], xviii., 1010, 1027.
‖ Pharm. Journ., [3], xxi., 760.

designates the coca plant cultivated in British India as *Erythroxylon Bolivianum*, and the Java plant as *Erythroxylon Coca*, vâr. *Spruceanum*. The latter is stated to occupy a position between *E. Coca* and *E. Coca*, var. *Novagranatense*, and is most probably the plant that yielded the coca imported into Paris several years ago.

In the cocas from South America the alkaloidal percentage is also by no means constant, but varies both in quantity and quality. These variations appear to be attributable not only to the variety of plant, but also to the influence of local circumstances, as culture experiments in the East Indies have shown. It is also to be taken into account that, according to Rusby,* the alkaloidal percentage varies with the age of the leaves, and that less careful drying or a lengthy transport of the coca, especially if it has been packed while in a moist condition, considerably decreases the yield. From both the first-named South American cocas, when they have received good treatment, I have obtained 0.7 to 0.9 per cent alkaloid, of which the greater part consists of cocaine in the broad-leaved variety, and to the extent of about one-half in the narrow-leaved or Trujillo coca. The third kind, or the coca obtained from Paris, however, yielded 1.2 per cent alkaloid, of which about one-quarter consisted of cocaine, whilst one specimen, an apparently excellent coca from Venezuela, contained only 0.02 per cent alkaloid. Whether a trace of cocaine occurred in the latter, or whether it was entirely absent therefrom, could not be decided from the small quantity of material.

Under the name "crude cocaine" is understood the total quantity of bases as they are obtained by one or other method from the various kinds of coca. Owing to the differences which the "crude cocaine" must necessarily show, it is clear that it is not possible to obtain a pure preparation from this material, if it is simply saturated with hydrochloric acid and then evaporated to crystallization, as Squibb† earlier recommended. Meanwhile, however, the method for the preparation of cocaine hydrochloride has been so perfected—I need only refer to Williams'‡ method—that the differences in the crude material are no longer a matter of serious consideration.

II. COCAINE.

I have effected the separation of the cocaine from the crude substance direct with hydrochloric acid in such a way that the accompanying alkaloids have been retained unaltered. The alkaloid was obtained from the hydrochloride, which had been once recrystallized from chloroform with the addition of ether, by means of ammonia or sodic carbonate and ether, the ethereal solution depositing the base in the well-known form upon evaporation. The body melts, like the synthetical product, at 97° C. in Roth's apparatus. Niemann, as well as Liebermann and Giesel, record the melting point as 98° C.; Skraup as 96° to 97° C.; Merck as 97° to 98° C. Cocaine dissolves readily in hot petroleum-ether, and crystallizes out of the cooled solution in needles. It also dissolves easily in hot alcohol, wood spirit, acetone, and chloroform, and crystallizes from these solvents upon cooling, if the solution be sufficiently concentrated. In hot water it dissolves more readily than in cold, but at the same time a fairly rapid decomposition occurs. Even if the alkaloid be heated for some time with water to 80° C., it gradually disappears and is not again precipitated upon cooling. The solution, which is of distinctly acid reaction, now contains benzoylecgonine and ecgonine, as well as cocaine benzoate, so that a decomposition of the base is effected in the following sense:

$$C_{17}H_{21}NO_4 + H_2O = C_{16}H_{19}NO_4 + CH_4O$$

$$C_{17}H_{21}NO_4 + 2H_2O = C_9H_{15}NO_3 + C_6H_5.COOH + CH_4O.$$

The benzoic acid liberated in this reaction—not an inconsiderable quantity—combines with the cocaine still undecomposed, and effects not only its solution, but also hinders its further decomposition. That benzoylecgonine is produced by the action of water upon cocaine Paul and Einhorn have already demonstrated, without, however, particularizing the course of the reaction.

Even when cocaine is recrystallized out of hot dilute alcohol, partial decomposition into methyl alcohol and benzoylecgonine is scarcely to be avoided. If the cocaine obtained in this manner be dissolved in ether, more or less benzoylecgonine may be removed from the ethereal solution by treatment with water.

The hydrochloride of cocaine itself contains 1 molecule of alkaloid to 1 molecule of hydrochloric acid. It crystallizes from ice-cold water in colorless prisms containing 9.5 per cent of water of crystallization, and therefore corresponding to the formula $C_{17}H_{21}NO_4,HCl + 2H_2O$; but an anhydrous form occurs as a crystalline powder, when, for example, absolute ether, in which it is insoluble, is added to its solution in chloroform. According to Antrick, it melts at 181° to 185° C.; according to Einhorn and Marquardt, at 181.5° C.; whilst my own observations in Roth's apparatus correspond to 186° C. Minute impurities, almost defying detection, lower the melting point of the hydrochloride to about 180° C.

A very dilute solution of the hydrochloride gives almost immediately upon addition of ammonia a crystalline precipitate of cocaine. When the solution is more concentrated, however, a milky opaqueness first occurs upon the addition of ammonia, but the opacity soon disappears and crystals of cocaine are deposited. The resulting precipitate, as also that obtained with carbonate of soda, is anhydrous cocaine, an observation also recorded by Liebermann and Giesel, and not a hydrate of the alkaloid as suggested by Squibb. Indeed, cocaine forms no compound with water, a fact inconsistent with the hypothesis of Liebermann and Giesel, who attempted to explain the peculiar behavior of cocaine to ammonia or soda by assuming that cocaine is at first precipitated by these reagents from its salts in an amorphous condition, and that the amorphous cocaine becomes more or less quickly crystalline, according to the concentration of the solution; passing through an intermediate soluble form. This property of cocaine is met with in many other alkaloids.

The aqueous solution of cocaine hydrochloride, which reacts neutrally, gradually acquires a slightly acid character when boiled for a considerable time under an upright condenser, or heated in a sealed tube to 120° C., though the amount of decomposition is very slight, even if the heating be long-continued. But if hydrochloric acid be added to the solution, formation of benzoic acid occurs rapidly, and the decomposition continues until within a short time the whole of the cocaine has been decomposed. The same reaction is observed if a solution of cocaine in concentrated hydrochloric acid be allowed to stand at ordinary temperatures; but, on the contrary, no decomposition of cocaine occurs if it be boiled at the ordinary atmospheric pressure with excess of benzoic acid and water, or with dilute or glacial acetic acid. It may be, therefore, concluded that the action of acids upon cocaine depends upon especial conditions.

The slightly warmed aqueous solution of the hydrochloride gives with platinum chloride a yellowish-white, flocculent precipitate of the double platinum salt, that soon becomes crystalline. If platinum chloride be added to a hot alcoholic solution of the hydrochloride, the double platinum salt separates in fine orange-colored leaflets that are completely anhydrous and melt at 205° C.

The gold salt is precipitated by gold chloride from hot alcoholic solutions of the hydrochloride in beautiful gold-shimmering leaflets that are anhydrous and melt at 196° C., and, contrary to the assertion of Lossen, are of very stable nature.

Upon mixing the aqueous solution of cocaine hydrochloride with a dilute solution of permanganate of potash, a purple-violet precipitate of permanganate of cocaine obtains, whilst the supernatant liquid also acquires a purple-violet tint. In a short time, however, both liquid and precipitate lose their color and dioxide of manganese is deposited. On the other hand, a solution of cocaine hydrochloride acidified with hydrochloric acid gives with bichromate of potassium a pretty precipitate, consisting of leaflets. Both reactions—the first discovered by Giesel, the second by Mezger—are of importance, since the first serves to detect an admixture of cinnamylecgonine methyl ester and similar compounds, the second indicates the presence of cocamine and such bodies.

* Pharm. Journ., [3], xvi., 706.
† Pharm. Journ., [3], xv., 776.
‡ Pharm. Journ., [3], xviii., 262.

OUR FIGURES.

FIGURES, like everything else, have passed through an evolutionary process. Those little Arabic signs, which have now such a significance for all of us, had little of their present elegance when first introduced in Europe in mathematical works in the twelfth century. The zero was at first wanting, even in the Orient, and it was not till 813 to 833, during the time of the Caliph Al-Mamum, that it "figured" in an arithmetical translation. How convenient these figures are in comparison with the heavy and cumbersome Roman system that is now confined to monuments and dial plates! But these latter held out valiantly, and had, it would seem, warm and very forcible defenders, as an instance of which we are informed that in 1299 the Florentine money-changers were forbidden to reckon in figures, while the statutes of the University of Padua prescribed that the price of books should be given on the title-page, but *non per cifras, sed per literas claras*. It must be said in extenuation of this rule, however, that the figures of that period reflect little credit on the type-founder, as may be seen from the accompanying cuts.

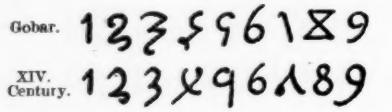


FIG. 1.

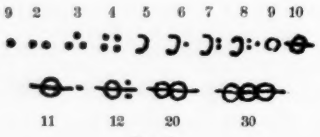


FIG. 2.

FIG. 3.

From Salisbury Cathedral (1554).

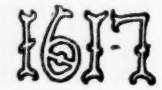


FIG. 4.

From a house in Aix-la-Chapelle (1617).

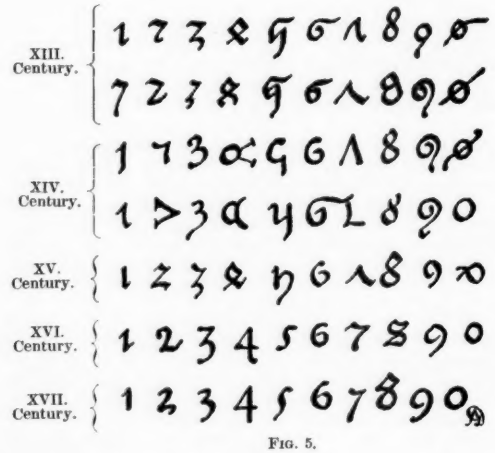


FIG. 5.

Evolution of Arabic Numerals.

The Arabic numerals began to come into more general use in the fifteenth century. Very little improvement can be discerned from the original Arabic (Gobâr) figures and those in use in the fourteenth century (Fig. 1).

Roman characters were often intermingled with the Arabic. An inscription on a tomb in Salzburg has 1463 written as follows: 1.4.LXIII., while 1456 on an ecclesiastical seal is rendered M456.

A very curious specimen of a numeral system is shown in Fig. 2, from a manuscript of the fourteenth century.

Architectural monuments of the Middle Ages also furnish some singular specimens, as in Figs. 3 and 4.

The specimens from various centuries (Fig. 5) show the changes undergone: 1, 3, 6, 8, 9, and 0 have changed but little, while 4 and 5 have been really "transmogrified." Many Frenchmen to-day make the 5 exactly as in the seventeenth century; 2 and 7 are also very different now from what they were.—*American Bookmaker.*

Death after Salol.—A case was some time ago reported by Aufrecht and Behm in which death followed its use in acute endocarditis. More recently Dr. Chlapowski has published in a Bohemian medical journal an instance in which a similar fatal result followed a 15-grain dose ordered to a patient who was suffering from severe gastric symptoms, and who was being examined by Ewald's method.—*Lancet.*

The Best and Safest Form of Alcohol Lamps.

PROF. M. T. LECCO draws attention to the fact that glass alcohol lamps having a broad, compressed form, or a flat surface, from which the neck projects, are unsafe, as the large surface exposed to the heat of the flame is liable to crack from unequal expansion. The safest form is the conical. We might perhaps more correctly describe the latter as turnip-shaped, the broadest part being, of course, at the bottom, while the neck is formed by the tapering end.—After *Chem. Zeit.*

[We have had considerable experience with alcohol lamps, and have come to the conclusion that the globular ones are, so far, the best. The market does not yet afford the turnip-shaped ones described above. When it does we shall be inclined to try them. There is a form of brass alcohol lamp in the market which has the very fault pointed out by Prof. Lecco. Its flat surface often becomes very hot, and by careless management, when the amount of alcohol is low, and the wick or neck insecure, the gases contained in the lamp are ignited and an explosion results. This has happened repeatedly to our knowledge. But in most of these cases wood alcohol was used as fuel, and this is still more unsafe than ordinary alcohol.—ED. AMER. DRUGG.]

Methyl-Mercaptan,

C_6H_4S, is the substance to which the urine voided after eating asparagus owes its peculiar odor, as was recently ascertained by Nencki, after a futile attempt to determine the cause of this peculiar odor had been made before by Hilger. Nencki distilled the asparagus-urine, previously acidulated with oxalic acid, over a sand bath, whereby the escaping gases were passed into a wash bottle containing a 3-per-cent solution of mercury cyanide, which retained the methyl-mercaptan. According to Loew, the mother substance of methyl-mercaptan in the shoots of asparagus is, in all probability, an organic sulphur combination of simple structure accompanying the asparagin. —*Merck's Bulletin*, June, 1891.

Apomorphine Hydrochlorate.

MERCK & CO. (in *Bulletin*, June, 1891) draw attention to the fact that the solubility of hydrochlorate of apomorphine is given incorrectly in the U. S. Pharm., where it is stated that the salt is soluble in 6.8 parts of water. This has, however, been pointed out as long ago as in 1885, when it was shown that the solubility is more nearly 1 in 50 (see "Digest of Criticisms," page 28). Merck states that 1 in 40 (as given by the new German Pharmacopœia) is the correct proportion.

HEMPEL'S IMPROVED EXSICCATOR.

A SHORT time ago Walter Hempel showed that by reversing the arrangement in the exsiccators at present in use—that is, by placing the substance to be dried *below* the moisture-absorbing medium—a much more rapid and perfect effect is produced. He now suggests a form of apparatus which meets all the requirements.

The apparatus consists of a cylindrical glass, A, and the cover, B. The latter has the form of the well-known glass fly traps. The sulphuric acid is contained in the annular groove *a*. The neck of the vessel B is closed with a hollow stopper (provided with a stopcock) which may be connected with the air pump. The form of the vessel B permits the latter to be laid upon its side when it is temporarily taken off the cylinder. This prevents the ground bottom from becoming gritty with dirt, etc., which would interfere with its air-tight fitting.

In making or choosing the upper vessel B, the opening at *a* should be as large as possible, and its upper flange, at *y*, should be slightly curved toward the outer wall.—*Chem. Centralbl.*, 1891, 1, 908.

Hydrogen Peroxide.

DR. C. KRAUCH, in his revised work on Reagents, gives the following description, tests, and notes on hydrogen peroxide.

"*Hydrogen Peroxide.*"—A clear, limpid, very faintly acid liquid, containing about 3 per cent of hydrogen peroxide [H_2O_2], and strongly effervescing when mixed with solution of permanganate of potassium, the latter at the same time losing its color.

Tests for Impurities.—Sulphuric acid: Dilute 10 C.c. of hydrogen peroxide with 50 C.c. of water, add to the liquid a little hydrochloric acid, heat to boiling, and add a few cubic centimeters of solution of chloride of barium. Even after standing for several hours, no reaction for sulphuric acid should show itself. [See, however, below, since a product of this degree of purity is only required in analysis.]

Alumina: 10 C.c. of solution of hydrogen peroxide, when diluted with water and treated with ammonia and ammonium carbonate, yield no precipitate.

Phosphoric Acid: On mixing 5 C.c. of hydrogen peroxide solution, previously diluted with water, with a few cubic centimeters of magnesia mixture [solution of 110 Gm. of magnesium chloride and 140 Gm. of ammonium chloride in 1,300 C.c. of water, addition of water of ammonia, specific gravity 0.960, to 2 liters, and filtering after two days], and with ammonia in excess, nothing material should separate [that is, the solution should not become more than slightly turbid].

Magnesia: On adding to 5 C.c. of hydrogen peroxide solution some ammonia and a few cubic centimeters of sodium phosphate solution, no precipitate should appear.

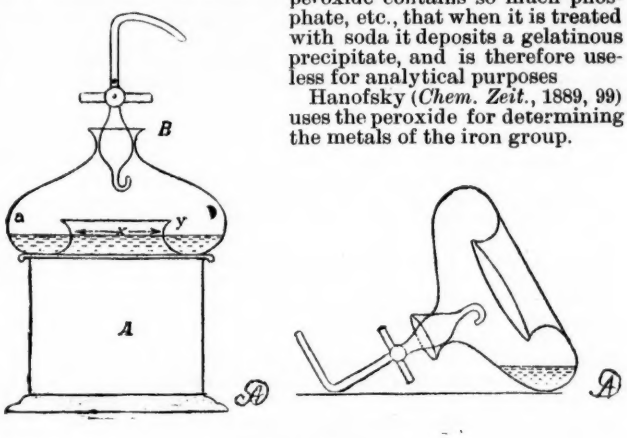
Quantitative Determination.—The following method is very convenient: Titrate with a solution of permanganate which has been standardized by oxalic acid. Or, if no standardized permanganate is at hand, proceed as follows: Make a solution of 3.2 Gm. of the purest obtainable permanganate (Merck's "Kalium hypermanganicum purissimum") in 1 liter. Dilute 5 C.c. of hydrogen peroxide solution with 50 C.c. of water, add 10 C.c. of diluted sulphuric acid (1:4), and titrate with the permanganate solution until a permanent red tint remains. Each 1 part of permanganate corresponds to 0.538 parts of hydrogen peroxide.

Hydrogen peroxide is frequently [in the U. S. always] furnished by factories by so-called volume instead of by weight per cent. A 10-volume solution, for instance, is one which contains for every volume of the solution 10 volumes of available oxygen. A 10-per-cent (by volume) peroxide of hydrogen contains 3.0382 parts by weight of H_2O_2.

Uses.—The use of hydrogen peroxide as a useful oxidizing agent in analysis was first proposed by Alex. Classen and O. Bauer (*Berichte*, 16, 1061), particularly for oxidizing and determining sulphur in carbon disulphide, in metallic sulphides, and in sulphites and hyposulphites. For this purpose the solution of the peroxide must be free from sulphuric acid and otherwise respond to the above-named tests. The same chemists use the agent also for determining hydrochloric and hydriodic alongside of hydrosulphuric acid, for which purpose it is necessary that the peroxide should be absolutely free from hydrochloric acid. But in commerce it is customary to add to the peroxide solution, for the purpose of preserving it, either a little sulphuric or a little hydrochloric acid, which must be taken account of when using the substance as a reagent. For sulphur determinations the peroxide must be entirely free from sulphur, but may contain a little hydrochloric acid; and for chlorine determinations it must be free from the last-named acid, but may contain a little sulphuric.

Wilfarth uses the peroxide also for determining nitric acid. He also points out that much of the commercial peroxide contains so much phosphate, etc., that when it is treated with soda it deposits a gelatinous precipitate, and is therefore useless for analytical purposes

Hanofsky (*Chem. Zeit.*, 1889, 99) uses the peroxide for determining the metals of the iron group.



Hempel's Exsiccator.

In the *Pharm. Zeit.*, 1888, 20, it is pointed out that all commercial peroxide up to that time contained alumina and phosphoric acid. Scholvien has also found nitric acid in it. According to Mann, magnesium chloride is almost always a constituent of the peroxide used for technical purposes. [Of course, all these statements refer to the European market.] The brands intended for use in the arts, and also the medicinal kind, are often unsuited for analytical purposes. When it is wanted for the latter the quality sold with the qualification "purissimum, pro analysi" should be employed.

For the preparation of oxygen gas from the peroxide solution by means of chloride of lime, the quality used in the arts is sufficiently pure.

The solution of the peroxide must be examined as to its strength from time to time, since it decomposes, particularly when it is not acid in reaction. Explosions have sometimes been caused by the decomposition of the peroxide. If the pure, unacidified peroxide is kept in glass vessels, the alkaline nature of the glass is, in itself, sufficient to hasten the decomposition of the compound. For this reason it is customary to acidify it.

THE following is taken from an essay by Dr. B. W. Richardson, read before the Medical Society of London on March 23d:

Peroxide of hydrogen is still made, as Thénard first made it, by the action of an aqueous acid solution on peroxide of barium, the number of volumes in each specimen turning on the number of precipitations.

I originally proposed a 10-volume solution for medical purposes, and that has been well adhered to; but for special purposes a solution of 20 and even 30 volumes may be employed. In order to keep the oxygen in the solution it is necessary to have it slightly acidified, either by dilute nitric, hydrochloric, or phosphoric acid; and, for my part, I prefer the dilute phosphoric acid. In this form the solution can be administered internally in doses varying from a fluidrachm to a fluidounce; but 2 or 4 drachms diluted in 10 fluidounces of water may

be considered an average dose. The taste is peculiar, being identical with that of ozone when inhaled by the mouth, and not at all dissimilar to the taste of chlorine in a weak solution. For injection purposes the solution should be rendered neutral by the cautious addition to it of caustic soda or potassa. The soda I think is the best, but it should not be neutralized until the time it is wanted. In "10 volumes" it may be injected either into the cavities or into the cellular tissue without being further diluted. [We know positively that the internal use of *undiluted* hydrogen peroxide, and its application to the mucous membrane of the rectum, bladder, and vagina, has produced very serious results. Indeed, several prominent physicians who had commenced to use it in considerable dilution for such purposes have abandoned its use. Externally it is comparatively harmless.—ED. AM. DRUGG.] The solution of the peroxide is incompatible with many substances, but it is compatible with the following: the mineral acids, tannin, alcohol, glycerin, alcoholic solutions of the alkaloids, and alcohol combined either with ether, amyl hydrate [?], amyl nitrite, or isobutyl [?].

Administration by Inhalation.—The oxygen from the peroxide can also be administered by inhalation by means of a simple apparatus which I have constructed for general use, and in working which I have taken advantage of another oxygenated body that liberates the oxygen and at the same time yields up a portion of its own oxygen.

Into a glass vessel having two necks, like the ordinary Woulff's bottle, a few ounces of the peroxide solution are placed. A long-stemmed funnel—the tube having a stopcock—runs through the stopper of the bottle to the bottom of the contained solution. From the second neck of the bottle there springs another tube for inhalation, at the free end of which is a double-valved mouthpiece, like the oldest and best of the chloroform inhalers. The apparatus is now ready for use. When it is wanted the funnel is charged with a solution of permanganate of potassium in the proportion of 10 grains of the permanganate to a fluidounce of water. The tap is then turned, the permanganate solution flows into the peroxide solution, and immediately oxygen derived from both bodies is briskly evolved. This, if necessary, can be caught in a flexible balloon or bag, from which it can be inhaled in measured doses, but this is not a requisite. Should the practitioner desire to combine the oxygen with ether, or with any other volatile body soluble in ether but not in water, he can allow the ether or ethereal solution to float on top of the peroxide solution. Then, as the oxygen escapes, the ether, or the ether with its other volatile comrade, passes over in combination with the oxygen. A patient can help himself to a dose at any time, as may be directed, by merely adding a measured quantity of the permanganate solution.

Nitrite of amyl can be inhaled in this manner with ether, and, in short, there is here a means of administering most of the active volatile medicaments by inhalation, and in a form most ready for combination with the blood, as it passes in its course over the pulmonic circuit. Under the form of ozonic ether the administration can be carried out either as a medicine to be taken in water or as spirit solution by the mouth, in doses of half a fluidrachm to 2 fluidrachms, or as fine spray from the Siegle steam inhaler. For a styptic and deodorant spray for the throat the following form is useful: alcohol, pure (sp. gr. 0.830), half a fluidounce; tannin, pure, 20 grains. Dissolve the tannin in the alcohol with an ounce of distilled water, and then add solution of peroxide of hydrogen (10-volume strength) to make 6 fluidounces. To make a solution for spray: Of this solution 1 or 2 fluidrachms can be used with a steam spray inhaler (Siegle's), a mode especially applicable in cases of throat affection.

When the peroxide spray is brought into use for the throat, it is good practice, in some instances, to make the spray the means of administration, in small doses, of medicinal agents which may act internally. Quinine may be administered in this manner, and also soluble preparations of opium, and many other substances that are soluble in alcohol and are at the same time compatible with the oxygen solution.

Spray for the Sick-Room.—Reference was made [by the author] in the first part of this paper to ozonic or sea spray for the sick-room—a solution diffused in the air as spray from a spray producer. The solution is composed of the solution of peroxide of hydrogen (10-volume strength), 10 ounces; common salt, 2 drachms. If a pleasant and pine-tree odor be desired, a few drops of ethereal tincture of kowrie gum can be added and the effect can easily be produced. In sick-rooms and in the wards of hospitals such sprays could be arranged to work automatically, so as to deliver and diffuse the solution at regular intervals. For this purpose Messrs. Krohne & Sesemann have constructed for me an apparatus which will distribute spray for several hours at a time.

Other Modes of Application.—The peroxide solution can be prescribed as a gargle, antiseptic, and astringent. A good form for this purpose is: To make an 8-ounce gargle:

Tannin, pure	10 grains.
Glycerin, pure	1 oz.
Distilled Water	4 fl. oz.
Hydrochloric Acid, diluted	10 minims.
Peroxide of Hydrogen, solution, sufficient for	8 fl. oz.

An evaporating lotion can be made with the peroxide in the following form. To make a 12-ounce lotion:

Alcohol, pure (sp. gr. 0.830)	2 fl. oz.
Anhydrous Ether	1 fl. oz.
Distilled Water	4 fl. oz.
Peroxide of Hydrogen, solution, of neutral reaction and 10-volume strength, to	12 fl. oz.

Another simple yet useful preparation of the peroxide is as an ointment for inunction over the surface of the skin after scarlet fever and other affections where there is free shedding of dead cuticle. The ointment is made by rubbing up ozonic ether with spermaceti ointment so as to form a thin paste, which may, if desired, be rendered thick by the addition of a little more spermaceti, or thin by addition of olive oil.

New Perfumes.

DR. HERMANN KRAETZER, of Leipzig, contributes the following formulas (some of the quantities being given here in the U. S. equivalents) to "Neueste Erfindungen and Erfahrungen":

1. *Bouquet d'Amour:*

Oil of Lavender, finest	1,200	grains.
" " Cloves, twice rectified	600	"
" " Rose	15	"
" " Bergamot	600	"
Tinct. Vanilla	6	fl. oz.
" Ambergris	6	"
Alcohol (deodorized)	12½	pints.

2. *Chypre* (for the handkerchief):

Oil of Rosemary, finest	1,080	grains.
" " Orange, bigarade	2,160	"
" " Petitgrain	1,260	"
" " Bergamot	2,340	"
" " Limetta	2,250	"
" " Neroli, petale	450	"
Alcohol (deodorized)	49½	pints.
Distilled Water	24¼	"

Digest the oils with the alcohol for four or five days, then add the distilled water.

[We believe that the quantity of water is too large. There is no use in throwing out of solution a considerable quantity of costly essential oils. Only such a quantity of water should be added as will cause a permanent cloudiness, after which the solution may be filtered, with the aid of talcum, or phosphate of calcium, or some similar inert powder.—ED. AM. DRUGG.]

3. *Ylang-ylang Extract:*

Oil of Ylang-ylang	370	grains.
" " Neroli, petale	48	drops.
" " Rose	115	"
" " Lemon	48	"
Musk	16	"
Alcohol [deodorized]	30	pints.

Note on Cinnamic Acid.

A REACTION by which cinnamic acid can be readily distinguished from benzoic acid and other compounds which resemble it more or less in appearance and properties, is the production of essence of almonds when dry cinnamic acid is treated with sulphuric acid and bichromate of potash. I find that when a small quantity of acid is kept for a few days in contact with sulphuric acid and bichromate of potash, without heating, the odor of hawthorn flowers thus produced gradually changes into an intense odor of honey. What produces the latter is yet unknown.

On various occasions, for some years past, I have endeavored to produce cinnamic acid from the leaves of the bay (*Laurus nobilis*), but with only partial success. The long-continued frost of last winter killed the leaves and some of the branches of a fine bay tree in the garden of my villa at Putney, and these dead leaves contain a good deal of essence of cinnamon as compared with the fresh leaf.

It has been lately asserted that cinnamic acid is a more powerful antiseptic than salicylic acid; but this needs confirmation. It is said to destroy the virus (bacillus) of pulmonary tuberculosis.

Still more recently a spray of essence of cinnamon has been found more effective in the treatment of all forms of malarial fever than the usual treatment by quinine and arsenic [ED. AM. DRUGG.] At Marguelane, in Turkestan, the spraying is performed several times daily in the hospital wards, and is stated to have proved more efficacious than essence of eucalyptus used in the same manner.—DR. T. L. PHIPSON in *Chem. News.*

Detection of Cottonseed Oil in Olive Oil.

PROF. DIOSCORIDE VITALI furnishes some new contributions towards the problem of detecting cottonseed oil in olive oil. We quote from *L'Orosi* (13, 361, after *Chem. Centralbl.*):

On mixing *pure olive oil* with twice its volume of ether, a yellowish solution is obtained. If now a few drops of a mixture of equal parts of concentrated sulphuric and nitric acid be added, a brisk reaction is started, after the termination of which the liquid becomes almost colorless.

Cottonseed oil, under the same circumstances, becomes distinctly yellow, and this color also appears in a mixture of both oils, so that a quantity of 10 to 15 per cent of cottonseed oil may still be recognized in a mixture.

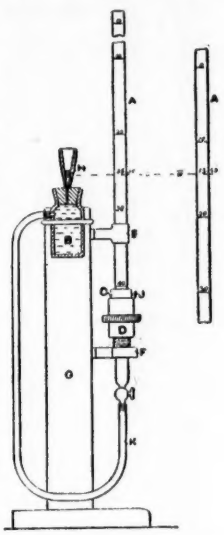
About 5 C.c. of the suspected oil are put into a test tube, mixed with 10 C.c. of ether, and about 5 drops of the acid mixture are added. When the reaction ceases, the mixture will be colorless if the oil was pure olive oil. But if from 10 to 15 per cent of cottonseed oil is present, the mixture is also at first nearly colorless, but on addition of 15 drops more of the acid it will assume a permanent yellow tint. This tint is due to the oxidation of a constituent of the cottonseed oil, probably its coloring matter, for still better results are obtained by treating the ethereal solution of the oil with chlorinated soda and diluted hydrochloric acid.

The same test will detect oil of sesame, which behaves in the same manner.

But cottonseed and sesame oil differ in this, that the latter becomes colorless, and *remains so*, when treated with chlorinated soda and hydrochloric acid. Peanut oil, on the other hand, behaves towards chlorinated soda like olive oil. These two oils, however, can be distinguished by the following behavior: On dissolving olive oil in ether, and *carefully* [!] treating this with potassium chlorate and sulphuric acid, there results a colorless ethereal layer, and below it an aqueous, somewhat turbid and whitish layer. In the case of peanut oil the ethereal layer is yellowish-white, while the aqueous one is turbid and reddish-brown. Cottonseed oil yields a yellow ethereal layer, and a colorless aqueous one. In the case of oil of sesame the latter is green. Sweet oil of almonds behaves like olive oil, but differs from the latter by becoming colored when treated with the acid mixture, and becoming yellow with chlorinated soda and hydrochloric acid.

RAPID DETERMINATION OF THE SPECIFIC GRAVITY OF SOLIDS.

ACCORDING to *Les Industries*, the apparatus here described furnishes the readiest method of determining the specific gravity of solids.

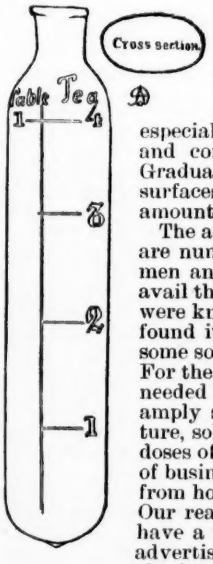


The burette A, held by a clamp, E, is connected, by means of a stout rubber tube, with a bottle, B, provided with a stopper and overflow funnel, H. The capacity of the bottle is exactly known. Supposing the substance whose specific gravity is to be determined is insoluble in water. In this case water is used as the liquid in the burette. In other cases some other liquid, having no solvent action on the substance, is used, the special specific gravity of the latter being taken account of in the calculation.

The first step is to ascertain the volume capacity of the bottle with connections. Water is allowed to flow from the burette (which must be large enough), through the stopcock and tube, into the bottle B until it stands in H at a certain height. The burette is then so adjusted that the level of the liquid in it and in the bottle is absolutely alike.

Next the burette is lowered, the stopper of B removed, and the solid substance introduced. When the water has completely enveloped or permeated it—as the case may be—the burette is raised again until the level of the liquid contained in it is again identical with that in the bottle. The difference between the first and second readings on the scale represents the volume of water in cubic centimeters which has been displaced by the substance. If the latter had previously been weighed in air, in grammes, it is only necessary to divide by the number of cubic centimeters of water displaced in order to find the specific gravity. For accurate determinations, temperature and pressure must be taken into consideration.

A HANDY VIAL.



FOR some time a vial, of which the adjoining illustration represents two-thirds the actual size, has been sold by a few dispensing apothecaries in this city, and ought to be more generally known. It is especially adapted for an upper vest pocket, and contains just four teaspoonful doses. Graduations, ground upon one of the outer surfaces, enable the user to regulate the amount taken and dispense with a spoon.

The advantages of this simple contrivance are numerous, and there are many business men and travellers who might be glad to avail themselves of such a pocket vial, if it were known to them. Physicians, too, have found it handy for carrying in the pocket some solutions required for an emergency. For the ergot or the chloroform ordinarily needed in most cases of confinement, it is amply sufficient. And for the cough mixture, solution of a bromide or iodide, or the doses of an alterative or tonic which a man of business may require during his absence from home in the daytime, it is admirable. Our readers may find it to their interest to have a few in stock, and some one of our advertisers of glassware can doubtless supply them.

Storer's Dictionary of Solubilities is expected to appear in a revised edition before the end of this year.

Wine Analysis.

ACCORDING to Ferd. Jean, director of the laboratory of the Paris *Bourse de Commerce*, the following methods are employed there for the analysis of wines:

1. *Estimation of Glycerin.*—Evaporate 250 C.c. of the wine to the volume of 100 C.c., then agitate this concentrated liquid with freshly precipitated plumbic oxide, and render it slightly alkaline with baryta water. Filter, wash, and neutralize the filtrate with dilute sulphuric acid. Concentrate in a flat porcelain capsule, and when the volume of the liquid has been reduced to 50 C.c., incorporate therein 5 Gm. of plumbic oxide, 10 Gm. of sand, and 20 Gm. of barium sulphate, evaporate, and dry at 100° C. During this drying the basin should be covered with a plate of glass to avoid spurting. The dried mass, having been powdered, is extracted with a mixture of equal parts of alcohol and ether, the extraction being continued until 60 C.c. of liquid have been obtained. Thirty C.c. of this liquid are placed in a tared glass capsule, and 20 Gm. of dried and powdered litharge having been added, the whole is evaporated on the water bath and then dried to a constant weight between 160° and 170° C. The other 30 C.c. are evaporated in a tared glass capsule 6 Cm. in diameter, and the residue is placed in the air bath between 160° and 170° C. until a constant weight is obtained.

The weight of residue No. 1, after deducting that of the litharge and capsule employed, *minus* the weight of residue No. 2, being first multiplied by 1.243, and then by 8, gives the weight of glycerin present in 1 liter of wine.

2. *Estimation of Astringent Acids.* (*a*) *Estimation of Œnotannin.*—Concentrate 200 C.c. of wine down to 100 C.c., shake with an excess of freshly precipitated arsenious sulphide, filter, and wash. Concentrate the filtrate to 50 C.c., add 10 Gm. of silica and 20 Gm. of barium sulphate, and dry at 100° C. Powder the residue and extract it with warm ether; evaporate the ether and dissolve the residue in a little alcohol. Take 1 Gm. of powdered hide which has been washed with alcohol, and dry at 100° C. Moisten it with a few drops of distilled water, and, having added the alcoholic extract, allow the whole to macerate for half an hour. Filter through a square of cambric, previously dried and weighed, wash with alcohol, press out excess of liquid, and dry at 100° C.

The increase in weight of the hide multiplied by 4 gives the œnotannin in 1 liter of the wine.

(*b*) *Estimation of Œnogallic Acid.*—Dilute the alcoholic filtrate from the hide with distilled water to 100 C.c., and in 20 C.c. of this estimate the acid by means of a solution of iodine that has been previously standardized with gallic acid as follows:

Prepare solution of iodine in potassium iodide containing 0.2 Gm. of iodine per liter, and also a solution containing 0.125 Gm. of gallic acid in 250 C.c. of distilled water. Mark a beaker at 50 C.c., place into it 10 C.c. of the gallic acid solution and 3 C.c. of cold-saturated solution of sodium bicarbonate. To this add the iodine drop by drop from a burette until a drop of the mixture, tested on thick filter paper impregnated with powdered starch, leaves a stain surrounded by blue. Now add distilled water to the 50 C.c. mark, and continue the addition of the iodine until a similar stain is again obtained. The amount of iodine thus used must be further corrected by making a blank experiment on 50 C.c. of distilled water with 3 C.c. bicarbonate solution, and deducting the amount of iodine required to produce the stain. Having thus standardized the iodine, it is used in a similar manner on the 20 C.c. of the alcoholic liquid from the wine which has been previously neutralized with sodium bicarbonate.

3. *Estimation of Coloring Matter.*—250 C.c. of the wine concentrated by evaporation (but without boiling) to 100 C.c. are rendered freely alkaline by ammonia, and then well shaken up with precipitated arsenious sulphide. The whole is then filtered and washed with distilled water, and the filtrate having been rendered acid by acetic acid—to precipitate any sulphide of arsenic dissolved by the ammonia—is again filtered and washed. The two filters containing the sulphide of arsenic are digested on the water bath in alcohol acidulated with acetic acid, and, the whole having been again filtered, the residue is washed with hot alcohol until all the coloring matter is extracted. Finally the alcoholic solution is evaporatad in a tared capsule, dried at 105° C., and the residual coloring matter is weighed.—*The Analyst*, March, 1891.

New Mode of Preparing Salicylate of Bismuth.

THE preparation of this salt is rendered difficult by the fact that bismuth salts are soluble in water only in presence of acids, while the latter do not permit salicylic acid to form any salt. H. Causse has now found that certain salts of ammonium, particularly the chloride, possess the same power as certain acids to render bismuth salts soluble in water. His process is as follows:

Subnitrate of Bismuth	100 parts.
Sodium Salicylate	120 "
Ammonium Chloride	q.s.
Distilled Water	q.s.

Dissolve the bismuth salt in concentrated hydrochloric acid, which is accompanied by the development of heat and of nitrous fumes. When the solution has become clear, it is siphoned off any sediment remaining, and poured into 1 liter of a cold-saturated solution of chloride of ammonium. Next the free acid is neutralized by the addition of a further supply of the saturated solution of ammonium chloride rendered alkaline by ammonia, until a permanent precipitate begins to form. (Another way to neutralize the free acid, according to the author, is to add more subnitrate of bismuth as long as it is being dissolved [?]). Next the liquid is mixed with the sodium salicylate and 500 parts more of the saturated solution of chloride of ammonium. In a few seconds a voluminous mass of salicylate of bismuth will crystallize out. The whole mass is thrown upon a cotton wad or pellet in a funnel, and washed with water until the chloride of ammonium is removed. Finally the mass is drained and dried at the ordinary temperature.

The resulting salt has the composition $Bi(C_7H_5O_3)_3 \cdot 4H_2O$, and crystallizes in colorless microscopic prisms resembling anhydrous sulphate of quinine. It is insoluble in cold water, and is decomposed by boiling water. Absolute alcohol likewise effects complete decomposition. The same is done by heating.—*Compt. Rend.* and *Chem. Zeit.*

Compressed Tea.

TABLET tea is manufactured at Hankow in factories belonging to Russian firms there.

It is made of the finest tea dust procurable. The selection of the dust is the work of skilled experts. The cost of the dust varies from 10*d.* a pound upward. This dust is manufactured into tablets by steam machinery. About two ounces and a half of dust are poured into a steel mould on a steel cylinder.

The dust is poured in dry without steaming, and the pressure brought to bear is two tons per tablet. Great care is required in the manufacture and packing of tablet tea, and the cost is comparatively high. The tablets are wrapped first in tinfoil, then in expensive and attractive paper wrappers, and finally packed in tin-lined cases for export to Russia. The tea, it is stated, loses none of its flavor by being pressed into tablets, and, as tablet tea is only one-sixth of the bulk of leaf tea, it is most convenient for travellers, and also for importing into the remoter regions of Russia.

The increase in the export of tea dust from Hankow to 726,729 pounds in 1890, from 140,933 pounds in 1889, is due to the fact that while Indian and Ceylon teas are ousting China tea from the British market, many consumers, being accustomed to the flavor of China tea, wish for it.

To meet this demand grocers use China tea dust to flavor the Indian tea. All the tea dust exported goes to Great Britain. Lately a new commodity has come on the Hankow market, to which the customs give the name of log tea. It is an inferior tea, with stalks packed in the shape of logs, which weigh from 8 pounds to 80 pounds each log. The tea is wrapped in the leaves of the *Bambusa latifolia*, and then reduced in bulk by binding round the log with lengths of split bamboo.

Testing Wax for Adulteration.

AT the laboratory of the *Bourse de Commerce*, of Paris, the following method is used for testing wax, according to a report by the director, Mr. Ferdinand Jean (in the *Analyst*):

1. *Estimation of Stearic Acid (if present).*—Introduce into a flask 3 or 4 Gm. of the sample for analysis, and bring it to the boiling point with 60 C.c. of alcohol of 96 per cent; shake whilst cooling, and then titrate the alcoholic solution with half-normal soda, employing phenolphthalein as an indicator. Wax being only slightly soluble in cold alcohol, there is no need to take notice of its acidity, and the amount of the mixture can be calculated as stearic acid from the number of cubic centimeters of normal soda used in the titration, knowing that 7 to 8 C.c. half-normal soda equal 1 Gm. of commercial stearic acid.

2. *Estimation of Paraffin or of Myristic Acid.*—To the flask containing the neutralized solution add 3 to 4 C.c. of solution of soda of 50 per cent, attach the flask to an upright condenser, and heat for an hour to saponify. The saponification being complete, distil off the excess of alcohol, put the residue into a capsule, mix with dry and short asbestos, dry at 100°, pulverize, and extract it with warm chloroform (or petroleum-ether), which dissolves the whole of the paraffin and the myristic acid, representing a part of the wax. To separate the paraffin, Horn has recommended acetylization, and solution of the produced ether by means of acetic acid, in which paraffin is insoluble. According to Horn, saponified wax should, under these conditions, yield 50 per cent of matters soluble in glacial acetic acid. Following Horn's process, we have neither been able to separate the paraffin nor to obtain a constant factor for the part of the wax soluble in chloroform.

We effect this separation in the following manner:

The chloroform holding in solution a part of the wax and all of the paraffin is distilled off in a weighed flask, and the residue, having been dried at 100°, is weighed.

Then weigh in a small flask a part of the residue left by the evaporation of the chloroform, and treat it under an upright condenser for an hour with 4 to 5 C.c. of anhydrous acetic acid. The acetylization being complete, pour the resulting fluid into a glass tube graduated in 10 C.c. and divided into tenths; rinse the glass with boiling crystallizable acetic acid, and turn the whole into the graduated tube. The volume of the liquid should be about 9 C.c. Place the tube in a water bath at 90°, then close it up with a cork and shake it forcibly so as to well emulsify the liquids, and replace in the water bath.

When the acetic acid has become clear, the volume of insoluble matter which floats on the acid is read off. Renew the shaking and place in the water bath until a constant volume of paraffin insoluble in acetic acid is obtained, of which calculate the weight, remembering that 1 Gm. of paraffin equals from 1.35 to 1.4 C.c. On deducting the weight of the paraffin from the weight of the residue furnished by the chloroform, we obtain by difference the weight of the portion of the saponified wax soluble in chloroform.

3. *Estimation of Stearin.*—The saponified part insoluble in chloroform is formed by the soap of stearic acid and of stearin and by saponified cerotic acid. To estimate the stearin, dissolve in boiling water, filter to separate the sand and asbestos, and decompose the filtered liquor by a slight excess of nitric acid diluted so as to set free the fatty acids; filter and estimate the glycerin in the filtered liquid (after neutralization and precipitation by plumbic acetate) by the potassium bichromate process. From the weight of the glycerin calculate the stearin or suet, keeping in mind that 5 parts of anhydrous glycerin equal 95 of stearin.

In cases where the proportion of stearin is small, it would be preferable to saponify 10 or 25 Gm. of the substance, and to estimate the glycerin by the bichromate process.

We therefore estimate by this method:

1. Stearic acid by alkalimetry.
2. Paraffin by measuring the part insoluble in acetic acid.
3. A part of the wax (myristic acid) by deducting the paraffin residue from the weight of the residue soluble in chloroform.
4. Stearin by the estimation of glycerin.
5. The second part of the wax (cerotic acid) by difference.

Purifying Platinum by Volatilization.

THE Imperial German Physico-Technical Institute ("Physikalisch-technische Reichsanstalt"), during 1890, organized a special department for the study of the method of separation among the metals of the platinum group, and paid particular attention to the methods of purifying platinum. Up to the present time, the purest commercial platinum was made by Johnson, Matthey & Co., of London, and this contained still about 0.02 per cent o impurities, consisting chiefly of silver and rhodiumf German-made platinum has heretofore been more im. pure. At the instigation of the above-named Institute-W. C. Heraeus, of Hanau, has now succeeded in obtain, ing platinum containing only 0.01 per cent of foreign-metals (chiefly iridium).

In the analysis of the platinum metals, the Institute usually followed the well-known but complicated methods of Stas, Deville, Debray, but recently it began experiments with other methods. One of these consists in separating platinum from the other elements by heating it in a current of chlorine and carbonic oxide (carbon monoxide) gas. This causes the platinum to become volatilized, combined with the gases, and the process has given encouraging results. It is this very process which permits the detection and separation of minute traces of silver and similar metals occasionally occurring in platinum.

While the gaseous compounds of platinum and carbon monoxide have been long ago described by Schützenberger, the recent experiments have thrown much additional light upon them. It was found possible to bring the gaseous compounds into aqueous solution, and to prepare from this, by double decomposition, a series of crystalline derivatives. It was also shown that all the gaseous compounds contain a stable radical of the composition PtCO (of dyad value), from which the carbon monoxide can be separated as gas only under certain circumstances.

Up to the present, the before-described method has not been found suitable for working on the large scale. But it is expected that further experiments will render it practicable.—After *Zeitschr. f. Instrumentenkunde*, 1891, 167.

Test for Mercuric Chloride.

MR. BORNTRAEGER recently discusses the best methods of detecting traces of mercuric chloride (in *Pharm. Centralhalle*).

He points out that any aqueous, oily, or soap liquid containing mercuric chloride gives immediately with zinc chloride and hydrochloric acid a black-gray color, while with sulphuretted hydrogen or ammonium sulphide it immediately becomes blackened.

When shaken with a mixture of potassium iodide, acetic acid, and ether, and allowed to stand, three layers are formed, the middle one constituting a green zone of the mercurous salt.

The separation is said to be so sharp that when carried out in a narrow test tube it gives approximately quantitative results.—*Pharm. Journ.*

Tellurate of Sodium for Night Sweat in Phthisis.

COMBEMALLE recommends tellurate of sodium in doses of not less than 0.05 Gm. (¾ grain), to be given at night, as an efficient remedy against night sweat in phthisis, and some other diseases accompanied by profuse sweating. To cover its garlicky odor and taste, it is recommended to combine it with oil-sugar of peppermint.—*Gaz. ther.*

[Tellurate of sodium is a rare chemical so far, and quite expensive. It has so many disagreeable or disadvantageous features that it will scarcely displace the remedies at present in use for the above troubles.—ED. AM. DRUGG.]

The Source of Cape and Natal Aloes.

CAPE aloes has hitherto been supposed to be derived from *Aloe ferox*, all authorities agreeing on this subject. Flückiger and Hanbury were the first to draw attention to a new kind of aloes exported from Natal, and therefore called Natal aloes, which is, however, unsuited for medicinal use. Last year the *Bulletin of Miscellaneous Information*, published by the director of the Royal Gardens at Kew, contained a notice that aloes, collected from *Aloe ferox*, was one of the exports from Greytown, the most northern port in Natal. Prof. Flückiger, upon request, received a specimen of this aloes, and upon examination found it to be absolutely identical with the Natal aloes formerly described by him and Hanbury in the "Pharmacographia."

Since the authorities at Kew believe that Mr. J. M. Wood, who reported *Aloe ferox* to be the source of this kind of aloes, has correctly identified the plant, and since it is unlikely that two so widely different species of aloes, the "Cape" and the "Natal," could be derived from one and the same plant, it remains to be seen whether "Cape" aloes is not derived from a hitherto undescribed species.—After *Arch. d. Pharm.*, 229, 121.

Calculating the Specific Gravities of Liquids without the Use of Tables.

THE specific gravities of liquids which do not suffer any alteration of volume when mixed with water (or other liquids) may be determined, without the aid of special specific-gravity tables, in the manner below explained.

In the following formulas and calculations, the figures expressing specific gravity are to be taken as decimal fractions, water being 1.000.

The principle of the calculation will be most readily understood by selecting an example. Supposing we had 1,000 Gm. of a solution of ferric chloride of the specific gravity 1.300, and it were required to dilute this with water so as to bring the specific gravity down to 1.240.

Let us designate by x the amount of water (in grammes) which is to be added; and then let us ascertain the volume (expressed in cubic centimeters) which will be occupied by 1000 Gm. of a liquid of the specific gravity 1.300 mixed with x Gm. of a liquid of the specific gravity 1.000 (viz., water).

Since the volume of a liquid is ascertained by dividing its weight with the specific gravity, and since 1 Gm. of water is equal to 1 C.c., we find the following volumes:

For 1000 Gm. of sol. of ferric chloride of the spec. grav. 1.300..... $\frac{1000}{1.3}$ C.c.

and for x Gm. of water (of spec. grav. 1.000).....x C.c.

Mixed or added together, these two liquids will, therefore, occupy the volume of..... $\frac{1000}{1.3} + x$ C.c.

Now, assuming that the required quantities of each liquid (the ferric chloride solution and the water, viz., 1000 Gm. of the former and x Gm. of the latter) had been taken and mixed so as to produce a liquid of the specific gravity 1.240, the volume or space occupied by this liquid will be, according to the rule above given, $\frac{1000 + x}{1.24}$ C.c.

We have, therefore, found two values or terms for the same space or volume, which we may set down in form of an equation, thus:

$$\frac{1000}{1.3} + x = \frac{1000 + x}{1.24}$$

Solving the equation, we obtain

$$1240 + 1.612\,x = 1300 + 1.3\,x$$
$$x = 192.6 \text{ (nearly)}$$

which figure represents the number of grammes of water that have to be added to the 1000 Gm. of the original ferric chloride solution of spec. grav. 1.300 to bring it down to spec. grav. 1.240.

If any other liquid besides water is to be used, the specific gravity of this must be taken into consideration. Supposing a more dilute ferric chloride solution of spec. grav. 1.100 had to be mixed with the stronger, so as to produce a liquid of spec. grav. 1.240; then, following the same train of argument as before, since x Gm. of a ferric chloride solution of spec. grav. 1.100 measure $\frac{x}{1.100}$ C.c., we have the equation

$$\frac{1000}{1.3} + \frac{x}{1.1} = \frac{1000 + x}{1.24}$$

Solving, we obtain

$$1364 + 1.612\,x = 1430 + 1.43\,x$$
$$x = 362.6 \text{ (nearly)}$$

being the number of grammes of the weaker solution of ferric chloride (of spec. grav. 1.100) which must be added to 1000 Gm. of the stronger to produce a liquid of the spec. grav. 1.240.

A general formula for making this reduction by means of a liquid of any specific gravity may therefore be constructed on the principles above explained.

Let us designate the several items entering into the calculation by letters:

G = the number of grammes of the denser liquid to be reduced.

S = the specific gravity of the denser liquid.

D = the specific gravity of the lighter or diluting liquid.

s = the desired specific gravity of the product.

Then we have

$$\frac{G}{S} + \frac{x}{D} = \frac{G + x}{s}$$

hence

$$x = \frac{DG(S-s)}{S(s-D)}$$

Whenever water is the diluent, D becomes 1.

A New Alkali Process.

IN an editorial on the present state of the British alkali trade, the editor of the *Chemist and Druggist* (June 13th) makes comparisons between the most important processes at present in use, and also mentions some of the newer processes. Among the latter—so the editor says—the best is the process patented by Messrs. Haddock & Leith, which purposes to recover the sulphur from the Leblanc vat waste; but instead of combining therewith the manufacture of ammonia soda, it aims at simultaneously converting "salt cake" into carbonate of soda, of a strength and purity equal to ammonia soda, by a wet method of decomposition, and without the use of ammonia. This process is an exceedingly ingenious one, conducted in four stages. The first stage is the manufacture of calcium sulphydrate, which is done by passing sulphuretted hydrogen through an emulsion of Leblanc vat waste. After this is fully charged and allowed to settle, the clear liquor is mixed with a saturated solution of salt cake. The result is that the sodium sulphate and the calcium sulphydrate interact, calcium sulphate being precipitated and sodium sulphydrate remaining in solution. But 4 per cent of calcium sulphate remains in solution—a rather astonishing amount—and is precipitated as carbonate in the third stage. The fourth and final stage, apart from evaporation, consists in the carbonation of the sodium sulphydrate solution, an operation performed by passing it through a tower into which lime-kiln gas (chiefly carbonic acid gas) is forced. Sodium bicarbonate is formed, three-fourths of it crystallizing out; sulphuretted hydrogen is given off, and is collected and utilized as such in the first stage, or is converted into sulphur or sulphuric acid. The mother liquor yields a crop of crystals on evaporation, and the liquor from that is used for neutralization purposes in the course of the process. It will be seen that this invention is the Leblanc, Solvay, and Chance processes rolled into one. It gives the chlorine of the first, takes advantage of the carbonating of the second (without the ammonia), and it advances Chance's idea to being not only a waste-recovering but an alkali-producing process. Chance applies carbonic acid to calcium sulphydrate; Haddock & Leith apply it to the sodium salt. At present the process is only on its trial; but it has advantages over other processes which have failed.

Specific Gravity and Percentage of Hydrochloric Acid.

PROF. LUNGE, who has already reinvestigated the densities and percentages of sulphuric and nitric acids, so that his new tables will no doubt be recognized as the most authoritative on record, has now also completed his experiments on hydrochloric acid, and published the results. In view of the importance of the subject for experiments at present conducted in connection with pharmacopœial revision, we will extract from Lunge's new table those values which most nearly correspond to the specific gravities quoted on page 422 of the U. S. Pharmacopœia.

The figures refer to a pure acid at the temperature of 15° C., compared with water at 4° C., and to a vacuum. The values corresponding to ordinary barometric pressure can be easily calculated. Indeed, the experiments themselves were made at various temperatures and pressures, and the results represented by Lunge's table are the figures obtained by calculation for a temperature of 4° C. and a pressure of 0 Mm.

Spec. Grav. at 15° C. Water at 4° C.	PerCen t HCl	Spec. Grav. at 15° C. Water at 4° C.	Per Cent HCl
1000	0.16	1110	23.82
1010	2.14	1120	25.75
1020	4.13	1130	27.66
1030	6.15	1140	29.57
1040	10.17	1150	31.52
1050	12.19	1160	33.46
1060	14.17	1170	35.39
1070	16.15	1180	37.23
1080	18.11	1190	39.11
1090	20.01	1200	
1100	21.92		

—After *Zeitschr. f. angew. Chem.*, No. 5.

Salicyl-sulphonic Acid, a new Reagent for Albumin.

PROF. A. MCWILLIAM, of Aberdeen, recently published an elaborate paper on a new test for "albumin and other proteids," discovered by him (in the *Brit. Med. Journ.*, April 17th).

The reagent is salicyl-sulphonic acid (or sulpho-salicylic acid; not to be confounded with salicyl-sulphuric acid), which is prepared by treating salicylic with anhydrous sulphuric acid, or by heating salicylic with strong sulphuric acid. The newly formed acid, in this case, will crystallize out on cooling, when it may be purified by recrystallization from hot water. It appears in long, thin, colorless needles, which are quite soluble in water and melt at 120° C.

This acid is a very delicate test for detecting all kinds of proteid substances in solution, producing therewith a white precipitate which becomes flocculent on boiling. All varieties of so-called albumins have been found to respond to the test; for instance, globulin, fibrin, proteoses, and peptones. But there is a difference when heat is applied. The precipitates caused with proteoses or peptones redissolve on heating, while those produced with ordinary albumin, globulin, fibrin, etc., do not dissolve.

To apply the test in general, a few drops of the aqueous solution of acid are added to the liquid to be tested. If proteids are present in notable amount, the precipitate appears at once. In highly dilute solutions it may require a minute or so until a cloudiness appears.

For the detection of albumin in urine, the test is applied as follows:

"Take a small amount of urine (for example, 20 minims), preferably in a very small test tube, and add a drop or two of a *saturated* watery solution of the reagent. If the urine is strongly alkaline an extra drop or two of the acid should be added, and if no opalescence or precipitate occurs it is well to test the reaction with litmus paper and make sure that the urine has been rendered strongly acid. On adding the reagent, shake the tube quickly so as to mix its contents. Then examine at once. The occurrence of an opalescence or cloudiness *immediately or within a few seconds* (for example, two or three seconds) is a test for proteids intermediate in delicacy between the cold nitric acid test on the one hand and the acetic acid and heat test (in favorable circumstances) on the other. The development of an opalescence some time after (for example, one-half to two minutes) is a more delicate test than even acetic acid and heat, and shows the presence of minute traces of proteids, which are probably insignificant from a clinical point of view, as a rule.

Next heat the contents of the tube to the boiling point. If the precipitate or opalescence is caused by the ordinary "albumin" (albumin and globulin) commonly present in albuminous urine, it does not disappear on heating, but, on the other hand, becomes markedly flocculent. But if the precipitate or opalescence is due to the presence of albumoses or peptones, it clears up on heating (before the boiling point is reached) and reappears when the tube cools.

[*Note by Ed. Amer. Drugg.*—The reaction between salicylic and sulphuric acid, so as to produce a sulphonic derivative, is as follows:

$C_7H_6O_3$	+	H_2SO_4	=	$C_7H_5.HSO_3.O_3$	+	H_2O
salicylic acid		sulphuric acid		salicyl-sulphonic acid		water
mol. w. 138		98		236		18

The formula for the new acid is, however, better written as follows: $C_6H_3.HSO_3.OH.COOH$. To make the compound, therefore, the two original acids must be taken in molecular proportions, enough of an excess of sulphuric acid being employed to make up for what it may be short of being the absolute "monohydrated" acid.]

Selenite of Ammonium as Alkaloidal Reagent.

IN 1885 Lafon announced the fact that a solution of selenite of ammonium in strong sulphuric acid (1 Gm. in 20 C.c.) was a most delicate reagent for identifying codeine. So small a quantity as one-tenth of a milligramme of codeine could be recognized by the test. The reaction consists in the production of a magnificent green color.

A. J. Ferreira da Silva has recently made further experiments with this test, and found it to be much more generally applicable. Lafon had stated that the reagent produced a faintly green tint only with morphine. Ferreira da Silva, however, finds that it produces a very intense greenish-blue tint, which, after half an hour, changes to maroon-yellow without producing any precipitate. After three hours the liquid is deep maroon-brown. No red deposit.

Various other opium alkaloids yield bluish or greenish color reactions, but in these cases there is always a colored deposit after some time.

Atropine, cinchonidine, cinchonine, and pilocarpine yield no coloration whatever.

Brucine yields a reddish or rose color, quickly becoming pale orange. After half an hour the color is amber, and no deposit is formed.

Physostigmine: lemon-yellow tint, turning into orange. After three hours the tint becomes paler.

Cocaine: neither color nor precipitate within half an hour. After three hours the liquid is reddish, and there is a slight (not red) deposit.—After *Compt. Rend.*, 112, 1266.

The other alkaloidal reactions given by the author do not appear to be of practical use.

The Presence of Alcohol in Commercial Ether.

IF a clear mixture of 4.5 volumes of a saturated solution of potassium bicarbonate and 1 volume of a saturated solution of mercuric chloride is shaken up with commercial ether, the mixture becomes turbid in ten to twenty minutes, and a white, amorphous precipitate separates out. If further quantities of ether are added, all the mercury is eliminated except traces, whilst the substance which reacted upon the ether is withdrawn from the mercurial solution.

The yellow or brown color imparted to commercial ether on the addition of potassium hydroxide is occasioned by alcohol.—*Arch. d. Pharm.* and *Chem. News.*

Potassium Iodate Proposed as Starting Point in Volumetric Analysis.

MAX GROEGER points out that potassium iodate, which can easily be prepared in a state of perfect purity, contains no water of crystallization, is permanent in the air, and fulfils every condition which can be expected of an ideal basis for volumetric work.

The salt is prepared in the following manner: Sublimed iodine is added to a moderately strong, hot solution of potassa (which must be as free from carbonate as possible) until it begins to be tinged by free iodine. The solution is then evaporated to dryness, the mass extracted with alcohol, and the undissolved residue repeatedly crystallized from boiling water until the solution no longer affects delicate litmus paper, and does not become blue when it is mixed with dilute sulphuric acid and gelatinized starch (showing the absence of iodide).

The alcoholic extract can be used for the preparation of iodide of potassium. For this purpose it is evaporated, the residue dissolved in water, enough iodine added to produce a decided yellow color, and hydrosulphuric acid passed through to destroy the iodate. The solution is then filtered, evaporated to the point of crystallization, and the product purified by repeated crystallization.

An aqueous solution of the salt must be perfectly neutral to litmus, and must remain colorless when tested with starch and dilute sulphuric acid.

The use of the salt in the preparation of accurate volumetric solutions is very simple.

1. *Iodometric Solution.*—About 0.15 Gm. of the iodate (powdered) is dried at 100° C.; after drying in the exsiccator, it is exactly weighed, dissolved in a little water, mixed with about six times its quantity of pure potassium iodide and an excess of pure hydrochloric acid, and a previously prepared solution of $\frac{1}{10}$ normal hyposulphite of sodium (but which may be a little stronger than $\frac{1}{10}$ normal) gradually added from a burette, gelatinized starch being used as indicator. According to the equation,

KIO_3	+	5KI	+	6HCl	=	6KCl	+	$3H_2O$	+ I_6
pot. iodate		pot. iodide		hydrochloric acid		pot. chloride		water	iodine

6 atoms of iodine correspond to 1 molecule of potassium iodate; that is [according to the atomic weights used by the author], 126.54 Gm. of iodine correspond to 35.575 Gm. of iodate. Supposing, then, that we had employed x Gm. of potassium iodate, and that, of the hyposulphite solution, y cubic centimeters had been consumed, each cubic centimeter of the latter will indicate $\frac{126.54\ x}{35.575\ y}$ of iodine, or $\frac{35.569 \times x}{y}$.

In order to prepare a $\frac{1}{10}$ normal acid, it is best to use hydrochloric acid. In this case the above reaction between potassium iodate and iodide is made to take place, so that an exactly measured quantity (about 50 C.c.) of an approximately $\frac{1}{10}$ normal hydrochloric acid is made to react with a slight excess of the two salts (viz., about 2 Gm. of potassium iodate and 12 Gm. iodide). The separated iodine, of course, is in exact proportion to the acid present.

The liberated iodine is then titrated with the previously standardized hyposulphite, and the amount of hydrochloric acid present then calculated, after which the acid solution is brought to the proper volume. On the basis of this $\frac{1}{10}$ acid a $\frac{1}{10}$ alkali solution is easily prepared.

For preparing so-called volumetric solutions, it is only necessary to take ten times the quantity of iodate and iodide above mentioned, and to use an acid ten times stronger.—After *Zeitsch. f. angew. Chem.*

The Opium Monopoly in the Dutch Indies.—It is reported that, in consequence of the numerous abuses to which it has given rise, the Dutch-Indian Government intends next year to abolish the system of sale by auction of the right to retail opium for smoking purposes. The opium traffic will thenceforth be conducted by the Government itself, upon the *régie* system, prevailing in certain French colonies, and, for tobacco, in France itself.—*Chem. and Drugg.*

Testing Oil of Turpentine.

MR. HINSDALE, of Fayetteville, N. C., some time ago announced a method for discovering petroleum in oil of turpentine, which consists in allowing the suspected mixture to evaporate on a water bath, and weighing the residue. G. Vulpius now confirms Mr. Hinsdale's observations, but introduces some modifications which permit the correct determination of the petroleum to one-tenth.

Upon the surface of the water contained in a porcelain capsule over the steam apparatus, and of a temperature of about 80° C., place two small tared glass capsules [or watch glasses], one of which contains 1 Gm. of the suspected mixture, while the other contains 1 Gm. of *pure* oil of turpentine. As soon as the latter has disappeared the other glass capsule is weighed. The excess of weight found is petroleum, though the small amount of resin which is contained in every, even the purest, oil of turpentine, and which is found deposited in the upper parts of the watch glass which had contained the pure oil of turpentine, should be deducted.

[The form of steam apparatus mentioned by Vulpius is not in use in this country. Any contrivance which will freely expose the contents of the two capsules at a temperature of about 80° C., and permit correct weighing afterwards, will no doubt answer.—ED. AM. DRUGG.]

The Purity of Benzol (Benzene).

THE occurrence of carbon bisulphide in crude benzene is well known. Messrs. C. Liebermann and A. Sergewitz point out that most of the commercial pure benzol boiling at 80° to 82° contains this substance, the presence of which can be readily detected by means of phenylhydrazin. On the addition of this reagent to a small quantity of the benzol, phenylhydrazin phenylsulphocarbazide,

$$CS\begin{matrix}\diagup S.N_2H_3C_6H_5 \\ \diagdown N_2H_4C_6H_5\end{matrix}$$

which melts at 97°, separates out after a short time.

The presence of carbon bisulphide in so-called pure benzol may sometimes lead, in working with certain substances, to very annoying secondary reactions. The average percentage of CS_2 in such benzol was calculated by the authors, from the weight of sulphocarbazide formed, to be 0.2 to 0.3.

The testing of benzol can easily be carried out and quantitative results obtained by treating 10 C.c. of benzol with 4 to 5 drops of phenylhydrazin, and shaking vigorously at intervals during an hour or an hour and a half. When 0.2 per cent of CS_2 is present, the precipitate appears quite voluminous, and with 0.03 per cent it is still quite easily perceptible; but the limit of the reaction appears to be reached at 0.02 per cent (0.17 Gm. in a liter), and it is necessary to start the crystallization by adding a crystal of the sulphocarbazide. By submitting the benzol to a distillation and testing the first portion of the distillate, the examination can be pushed still further.

This notice will perhaps be sufficient to cause greater care to be taken in separating the first runnings of the purer qualities of benzol.

"Crystallized" benzol has been found by the authors to be always free from carbon bisulphide, with the exception of one sample.

Phenylhydrazin is capable of extended application for the purpose of estimating carbon bisulphide in this manner. The authors, for example, succeeded in detecting this impurity in a sample of thiophene, prepared by Volhard's method, which was otherwise pure.—After *Chem. Zeit.* and *Sci. Am. Supp.*

Note on Oil Rosemary.

SOME time ago Schimmel & Co., of Leipzig, published certain data regarding oil of rosemary, based upon their own experience.

Among these is the specific gravity, which is stated to be not below 0.900 ("certainly not below 0.890"). Another statement is that the oil polarizes to the right.

Mr. R. A. Cripps, of London, now announces that these data do not correspond with genuine English oil of rosemary, the specific gravity of which may surely be lower, while it polarizes to the left.—After *Pharm. Jour.*

Notes on Pyoktanin.

PYOKTANIN, the trade-marked name of certain aniline colors (methyl-violet or "blue pyoktanin," and aurin [?] or "yellow pyoktanin"), has so far found many supporters, but also many opponents. Its supporters use it because it has been found to be, under certain circumstances, the most efficient antiseptic and bactericide at our disposal. And its opponents base their chief objection upon its disagreeable and extraordinary tinctorial powers. Moreover, some who used it without prejudice have reported it to have failed in their hands.

Regarding the latter it may be said that there may have been various causes for the failure, not due to the agent itself. One of these may have been the age of the solution. It has been found that the bactericidal power of the solutions of these aniline colors is rapidly lost by keeping. Solutions of pyoktanin should be freshly made when wanted for use, or, if to be kept for some days, should be preserved in bottles made of non-actinic glass.

Concerning the bactericidal power of pyoktanin, the experiments of Jaenicke may be quoted. The latter found that the development (but not the life) of the following bacteria was arrested by solutions of the dilution quoted in each case:

	Strength of Solution.
Bacillus of Cholera	1:62,500
Coccus of Pneumonia	1:1,000,000

To destroy their life or vitality, solutions of a higher strength were required, varying from 1 in 1,000 to 1 in 5,000 for the same period of time (one-half minute). In some cases more dilute solutions will accomplish the same purpose, but they require more time.

Pohl, who has recently published a dissertation on this subject, points out that the objection against pyoktanin, based upon its tinctorial power, is perhaps due to the use of this agent in cases where it is not at all wanted. It is not claimed that it has advantages over corrosive sublimate and similar antiseptics, when the object is to prevent a wound from becoming septic. Our present methods—application of dressings, bandages, sprays, etc., containing sublimate, etc., or sterilized by heat—are ample for this purpose. But pyoktanin comes especially into use and fills a real gap when the object is *to disinfect a wound which has become infected or septic*, for which purpose we had heretofore no efficacious agent.

"PYOKTANIN AS AN ANTISEPTIC" was the subject of a paper read before the New York Obstetrical Society by Dr. H. J. Boldt, of New York. He has given this remedy a thorough trial, though only for a short time, but has been very favorably impressed with it. The suppuration ceases more rapidly under its use than under other remedies, and without noticeable effect on the system. He used a 1-per-cent watery solution, which is five to ten times stronger than is recommended. He has used it with success as an intra-uterine medicament.

Liquefaction of Gases.—M. Raoul Pictet, whose name is associated with the liquefaction of oxygen, has recently communicated some interesting demonstrations of the liquefaction of gases (*Pharm. Cent.*, March 14th, p. 275). As a first source of cold, he uses a liquid mixture obtained by pressure of carbonic acid and sulphurous acid, which is already known as "Pictet's liquid."

By the cold produced in the volatilization of this liquid and the application of a pressure of 4 to 12 atmospheres, nitrous oxide is liquefied. The evaporation cold of the liquid nitrous oxide is then used in the liquefaction of oxygen, nitrogen, hydrogen, and atmospheric air, strong pressure being simultaneously applied in the case of air amounting to 200 atmospheres.

It is stated that upon the opening of the tap of the vessel in which the liquefaction of air has been effected, the air escapes in a splendid blue jet, which immediately changes into a bluish cloud and then disappears. The temperature of the liquefied air reaches —200°. Solidified quicksilver is said to present some beautiful tree-like crystalline forms.—*Pharm. Journ.*

Aniline-Black Marking Inks.

FROM time to time there appear in journals and works of reference certain formulas for preparing indelible ink which have "aniline-black" as a base. Some of these bear evidence that they were written without any experience or knowledge of the subject, by persons unfamiliar with the nature and chemistry of true aniline-black. Such are, for instance, all formulas which direct ready-formed aniline-black to be "dissolved" or "mixed" with other ingredients. Other formulas, again, fail or are unsatisfactory for other reasons.

Mr. R. Wright has recently investigated the subject, and has obtained some practical results, which he has communicated to the *Chemist and Druggist*. We give the essential parts of his paper here.

In order to produce a satisfactory result, the aniline-black must be generated upon the fibre or fabric itself. It is therefore necessary that a mordaunt be first applied to the latter, and afterwards the proper aniline solution which will produce eventually the black color.

The author recommends either of the following mixtures as *mordaunts:*

(*a*) Potassium Chlorate	20 grains.
Copper Sulphate	40 "
Ammonium Chloride	20 "
Distilled Water	6 fl. dr.
Thick Mucilage of Acacia	2 "

Dissolve the solids in the water with heat, then add the mucilage.

(*b*) Potassium Chlorate	20 grains.
Copper Chloride	40 "
Ammonium Chloride	20 "
Sodium Chloride	30 "
Distilled Water	5 fl. dr.
Thick Mucilage of Acacia	3 "

Prepare like preceding.

And the following as *developers:*

(*c*) Aniline	1 fl. dr.
Toluidine (solid)	10 grains.
Dilute Hydrochloric Acid	2 fl. dr.
Mucilage of Acacia	2 "

Dissolve the toluidine in the aniline, add the acid and mucilage, and mix. [The author says he used solid "ortho-toluidine." This must be an error, since this is a liquid, and remains so at temperatures over —20° C. He evidently means para-toluidine, which forms the starting point for fuchsin.—ED. AM. DRUGG.]

(*d*) Same as *c*, with addition of Methylated Spirit [or Alcohol]	1 fl. dr.

The spot upon which the writing is to be made is first to be treated with one of the mordaunts, and dried. It is then to be written upon with one of the aniline solutions by means of a quill pen. The fabric is then laid aside for several days, the longer the better, so that the air may exert its utmost influence upon it.

Finally the fabric is boiled with soap lye, when the writing will come out perfectly black.

Ink for Rubber Stamps.

ACCORDING to Dieterich (*Pharm. Manual*), the following colors and liquids are the best for this purpose.

(*a*) *Liquids.*—Make a mixture of 10 parts of water, 10 of alcohol, 10 of wood vinegar, and 70 of glycerin. For every 100 parts of this liquid use the amounts of coloring matter mentioned in the succeeding list.

(*b*) *Colors.—Blue:* Aniline-blue 1B, 3 parts. *Violet:* Methyl violet 3B, 2 parts. *Cherry red:* Diamond Fuchsin I, 2 parts. *Orange red:* Eosin BBN, 3 parts; as this color does not stand acids, the wood vinegar must here be omitted. *Green:* Aniline-green D (q. s.). *Brown:* Vesuvine B, or Bismarck brown (q. s.). *Black:* Deep-black E (q. s.).

Secret Remedies.—At a recent meeting of the Academy of Medicine, a paper read by M. Lereboullet on the subject of secret remedies, which had been submitted to the Academy, produced much mirth amongst the company. The witty academician reported on a number of remedies, family secrets, and useful and infallible panaceas, of which the composition had been forwarded direct to the Academy either by the healers themselves or through the Home Secretary. The majority of the inventors are artisans—shepherds, blacksmiths, nurses, barbers, etc. A few, however, come from the more educated classes—country clergymen, magistrates, teachers, retired civil servants, etc. All have the utmost confidence in the efficacy of the remedy they propose. They generally declare it to be an heirloom in their own family, and obtained from an aged savant or an octogenarian lady who had possessed the secret for several generations. The extolled remedy is rarely an innovation. Sometimes it has been exhumed from an "old book," or it may be from a "dusty parchment," discovered in a neighboring convent which had been pillaged during the Revolution. Some correspondents have no other object in their communication than a desire to benefit their fellow-creatures. Others propose to the Academy the most fantastic conditions for the disposal of their remedy. Very few of the remedies are of a therapeutic nature. Nearly all are tainted in some way by superstition.—PARIS CORRESPONDENT of *Chem. and Drugg.*

Macassar Oil.—The oil from the seeds of the *Schleichera trijuga* Willd., from the Sunda Islands, where it passes under the name of "macassar oil" and enjoys a great reputation as a hair dressing and means of removing scurf and eczema, has been submitted to examination by Messrs. Thümmel & Kwasnick (*Pharm. Zeit.*, May 20th, p. 314). It was found that the seeds, which contained no starch grains, yielded to petroleum-ether 68 per cent of fixed oil, but from the seeds freed from epidermis only 45.8 per cent was obtained by pressure. The oil was in both cases of the consistence of butter, yellow, mild in taste, and with an odor of bitter almonds. It melted at 21° to 22° C., but after long standing the more solid glycerides separated, melting first at 28°, and appearing under the microscope as fine needles. The fatty acids, with the exception of 3.14 per cent of free oleic acid, were present as glycerides. Of those in combination, 70 per cent consisted of oleic acid, and of the solid fatty acids 5 per cent with palmitic acid and 25 per cent arachic acid, the characteristic of the ground nut. Lauric acid was not present; and of the volatile fat acids, only acetic acid and no butyric acid could be detected. Hydrocyanic acid was found in the oil and in the seeds, being determined as 0.03 per cent in the former and 0.62 per cent in the latter. No amygdalin could be detected in the seeds, but hydrocyanic acid, benzaldehyde, and grape sugar, possibly the decomposition products of it, were found. A small quantity of cane sugar was also separated in the crystallized form.—*Pharm. Journ.*

Opium as Currency.—In parts of the Hankow district of China opium is used as a medium of exchange, and the consul there explains the curious circumstance in this way: Commerce, except along the water routes, is in a primitive condition. The great weight of the copper coinage renders it unsuitable for exchange. Silver, which is used in the large towns, is used in bulk by weight. It is melted into lumps of varying purity and weight; the most generally used vary from 68 to 70 ounces each. The inconvenience of dividing it is a serious drawback to its being used in the country, as is also the difficulty of testing its pureness. The credit of the native bankers is not widely enough established to give an extended currency to their notes. Under these conditions opium is found useful, in addition to pure barter which still prevails to some extent, in facilitating the exchange of commodities. In this respect it has three advantages—it is almost universally in demand, it is light and portable, and it is easily divided into small quantities.—*Chem. and Drugg.*

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NEWS AND NOTES.

NEW ENGLAND.

THE MASSACHUSETTS PHARMACEUTICAL ASSOCIATION held its tenth annual meeting in the parlors of the Atlantic House at Nantasket Beach, a noted summer resort on the south shore of Massachusetts Bay, some ten miles from Boston, beginning Tuesday, June 23d, and lasting three days.

The first session was taken up by reports of committees and officials, and the president's address. The report of the treasurer showed a balance of $457.69 in the treasury.

Secretary Colcord having, on account of inability to attend preliminary meetings, resigned in May, and being prevented from attending the meeting, there was no report by the secretary *pro tem.*

A vote of thanks was tendered Hon. G. T. Gilman, of the State Senate, for his able and persistent efforts in behalf of the Association in securing favorable legislation for the Board of Pharmacy.

The second session was called to order June 24th at 10:30 A.M. A vote of thanks was extended to Vice-President G. W. Cobb for his faithfulness and efforts made during the winter to secure more living remuneration for his fellowcraft, and he was made an honorary life member of the Association. A similar vote was enacted in behalf of ex-Secretary J. W. Colcord, as an expression of appreciation of his labors in behalf of the Association during the past nine years in which he has held the office.

A motion was adopted requesting the president to petition the next legislature to make it a penal offence for first conviction for a druggist or assistant to sell liquor by the glass or to be drunk on the premises. It will make no difference whether they are licensed or not.

It was voted to offer prizes of $25, $10, and $5, open to all clerks under twenty-one years of age presenting papers to be read before the Association at its annual meetings. The president was instructed to petition that druggists be excused from jury duty. The sum of $150 was taken from the treasury and added to the permanent fund.

The third session was held on the afternoon of the second day. The following officers were elected to serve the Association the coming year: President, Henry M. Whitford, of Lawrence; first vice-president, J. A. Rice, of Milney; second vice-president, W. W. Bartlet, of Boston; third vice-president, C. P. Alden, of Springfield; permanent secretary, M. L. H. Leavitt, of Boston; treasurer, Tom. B. Nichols, of Salem; trustees of permanent fund, F. E. Mole of Adams, C. A. West of Boston, F. E. Whiting of Great Barrington. The matter of co-operative

manufacturing and selling, after a lengthy and lively debate, was indefinitely postponed by dismissing the committee. In the evening at 7:45 an excellent banquet was served, about one hundred and fifty participating. It was one of the most elegant affairs in the history of the organization, and was followed by a dance, for which the wholesale druggists of Boston provided music.

The closing session was held Thursday morning, and was principally devoted to the discussion of trade matters, particularly the outlook for future protection. The Hood plan was ably discussed and defended by some of the leading members, and a vote of thanks was passed to Messrs. C. I. Hood & Co. for making an honest and strenuous effort during the winter and spring to put a stop to indiscriminate cutting, and regrets were expressed that owing to various causes the attempt failed. The plan proposed by the American Pharmaceutical Association was discussed in all its bearings and fully concurred in. The Association then adjourned to meet at such time and place as the executive committee shall select (probably some city in the western portion of the State, during June next).

The largest attendance was at the second session, and aggregated about one hundred. It was a lively meeting, and all present appeared to enjoy themselves to the fullest. About twenty-five new members were added to the roll. Papers were rather a scarce commodity, but whether this was due to want of effort on the part of the Committee on Papers, to lack of interesting subjects, or the well-known modesty of the members, is unknown, but probably the latter.

After adjournment the members took a ride for two or three hours over the famous Jerusalem road, along the ocean front.

A young man in the employ of W. W. Bartlet, pharmacist, 675 Shawmut ave., Boston, was seriously injured, July 2d, by jumping from an electric car while in motion and striking against a loaded team.

A man named DOHERTY, weary of life, purchased laudanum from DR. ARTHUR HUDSON, of Newton, June 24th, and suicided. No blame is attached to the doctor. Cause, inebriation, which the unfortunate was unable to conquer.

MICHIGAN.

THE School of Pharmacy of the University of Michigan held its twenty-third annual commencement at Ann Arbor, on Thursday, June 25th, 1891. The degrees conferred were as follows, in all 38.

Pharmaceutical Chemist.—Arthur Winfield Adams, Shinichi Ando, William Fuller Ashley, Robert M. Berry, Harry Lamont Bird, Perry Briggs, Homer Burgess, Arthur Campbell, Alfred Payson Churchill, John Ward Corbin, Frank Frederick Davis, Edith Emma Greaves, Frank Albert Green, D.D.S., Joseph Clement Hearne, John F. Hitchcock, John Loren Hubbard, Frank Pomfret Huested, Edward Morse Kennedy, Joseph Catlin King, Harry Cross Loudenbeck, Thomas Henry McGee, Benjamin Lindley Murray, Frank J. Peck, Dorian Melancthon Russell, Walter Karl Schmidt, Frank Irving Shepherd, Henry Fred Smith, Henry Persse Snow, Garrie Greene Van Schoonhoven, James Wheeler Whitney.

Master of Pharmacy.—Harry Kahn, Ph.G.

Bachelor of Science in Chemistry.—Frank Riley Ashley, George Oswin Higley, Stillman George Jenks, Abraham Lincoln Knisely, Walter Hammond Nichols, Julius Otto Schlotterbeck, Ph.C., Darius Parsons Shuler, Ph.C. Also the Honorary Degree of *Master of Pharmacy* was conferred upon Mr. Giles Lewis, of Chicago, holder of a certificate of proficiency for chemical and pharmaceutical work in this University in 1865–'67.

The exercises of Commencement Day were held for all departments together in University Hall, with an oration upon "The Progress of Truth" by President Daniel C. Gilman, of Johns Hopkins University. The entire number of graduates upon examination in all departments was 620. Upon Alumni Day, Wednesday, a business meeting of the alumni of the School of Pharmacy was held in Room A of the Chemical Building at 10:30 A.M.; members of the classes of '90, '89, '87, '86, '84, '75, and '71 were present. A committee was appointed to collate the by-laws and statutes of the society, and to submit the same by letter with any proposed new provisions of the constitution to the membership of the society for adoption, and after reply by the members to republish the constitution and enactments without further delay. It was voted to invite all non-graduates, students of the school, to attend the meetings of the society, and to participate in the same as associate members without vote. This being the year for the election of officers, the following were elected for the regular term of two years: President, J. O. Schlotterbeck, of '87; vice-presidents, C. W. Parsons, of 81, E. C. Bassett, of '83, and D. M. Russell, of '91; recording secretary, B. C. Hessee, of '89; corresponding secretary and treasurer, A. E. Mummery, of '85, addressed at Ann Arbor, Mich. The colors, cream and crushed strawberry, worn by '91, were adopted by vote as the indicative colors of this department of the university. The festoons of the ceiling of Room A were of the colors just mentioned, while the walls displayed the University colors, "the yellow and blue," all these decorations being arranged by the class of '91. The members of the graduating class presented themselves as members of the society, and on signing the constitution and by-laws, they were received.

After the business meeting, the members convened in Hangstefer's Hall and discussed the merits of a liberal repast. The ménu was presented with a fine frontispiece of views of the chemical laboratory at different stages since 1856, grouped together in photograph, the artistic work of Professor Stevens and his class in photography. After dinner the address of the retiring president, Professor A. B. Stevens, of the class of '75, was given. Speeches were made by Mr. Murray, of the graduating class; Mr. Boyce, of the class of '90, instructor in pharmacy in Kansas University; and some remarks were made by the dean, Dr. Prescott. The entertainment was diversified by very fine orchestral music by members of the class of '91.

The following is the list of theses of the graduating class:

Mr. Adams: Limits of Recovery of Atropine in Assays. Mr. Ando: Nitrogen Determinations. Mr. Ashley: Cinchona Assays in Commercial Samples. Mr. Berry: A Cabinet of the Elixirs of the National Formulary. Mr. Bird: Valuation of Mercurial Ointment. Mr. Briggs: Antiferments. Mr. Burgess: Capsicum and its Adulterations. Mr. Campbell: Determination of Poisons in Cosmetics. Mr. Chapel: Syrup of Citro-Iodide of Iron. Mr. Churchill: A Cabinet of the Elixirs of the National Formulary. Mr. Corbin: Microscopical Examinations of Saffron for its Adulterations. Mr. Davis: Oatmeal and its Adulterations. Miss Greaves: A Cabinet of Preparations of Manganese Salts. Mr. Hearne: Digestive Power of Pepsin, Pancreatin, and Papain (Papaytin). Mr. Hitchcock: Ceanothus Americanus; a Plant Analysis. Mr. Hubbard: Remedies for Rheumatism. Mr. Huested: An Index to the Literature of the Hydroxybenzoic Acids. Mr. Kahn, Ph.G.*: Hysteronica; a Plant Analysis. Horse Nettle Berries; a Plant Analysis. Mr. Kennedy: Crystallization; a Cabinet of Preparations. Mr. King: Salts of Hydrastine and Berberine; a Cabinet of their Preparations. Mr. Laudenbeck: Pichi; a Plant Analysis. Mr. McGee: Action of Hydrobromic Acid on Chlorides. Mr. Murray: Cobalt and Nickel Salts; a Cabinet of Preparations. Mr. Peck: Valuation of Tinctures and Fluid Extracts of Nux Vomica. Mr. Russell: Berberis Nervosa; a Plant Analysis. Mr. Schmidt: Gelsemium Sempervirens; Analysis for an Alkaloid. Mr. Shepherd: The Adulterations of Coffee. Mr. Smith: Cannabis Indica; Analysis for an Alkaloid. Mr. Snow: A Cabinet of the Liquors of the National Formulary. Mr. Ven Schoonhoven: Amyl Nitrite and Related Preparations. Mr. Whitney: A Cabinet of the Dry Preparations of the National Formulary.

PRIZES FOR THE BEST COLLEGE WORK.—Gilpin, Langdon & Co, of Baltimore, Md., desiring to stimulate the attainment of excellence in the work of colleges of pharmacy, made offer to the School of Pharmacy of the University of Michigan of a prize in one of the studies of each of the classes in the year '90–'91. This School of Pharmacy does not favor the policy of prize competition in college, but in this instance the offer was accepted so far as to permit the grant of prizes, first, to the best paper in final examination in the senior class, and, second, to the best one of the

* For the degree of Master in Pharmacy.

regular set of pharmacopœial preparations in the required laboratory work of the junior class The prizes consisted of 60 samples of crude drugs in assorted powders, 1 and 2 pounds each; 30 pound samples of assayed powders; 25 pound samples of choice preparations, chiefly dry materials; and 14 selected articles of fine pharmaceutical apparatus. Altogether, each prize presented an array most inviting to any pharmaceutical student. The judges were, for materia medica, Prof. J. J. Abel, of the chair of materia medica in the Department of Medicine in the University, with Mr. Otmar Eberbach, of the Michigan State Board of Pharmacy; and for the laboratory work in preparations, Messrs. A. S. Parker and A. W. Allen, pharmacists, of Detroit, and A. C. Schumacher, of Ann Arbor. The junior prize was gained by "No. 37," who proved to be Mr. Richard Fischer, of New Ulm, Minnesota, from the store of C. L. Roos, Pharmaceutical Class of '83. The senior prize was gained by "Chimaphila," who was found to be Mr. Joseph E. Carmody, of Watervliet, Michigan. Mr. Carmody is a senior in several of the studies, but a junior in a few studies, having entered the school for the second semester of 1889-90.

ST. LOUIS.

THE weather in this city and surrounding country is rather difficult to understand and very hard to predict with any degree of certainty. The almanacs seem to be about as good weather prophets as the Government Signal Service.

The general effect on trade of our uncertain meteorological conditions has not been bad for the retailers. All seem to feel well, and consequently must be doing well. The live pharmacist, who has an eye to business and the welfare of trade, may not always be a weather prophet or place faith in the signs of the goose bone, but he should observe the relations of the weather to his business, and always be ready for the particular kind of trade that each style of weather favors.

The wholesale trade of this section is running along smoothly, with no peculiarities worthy of note.

Again we hear a rumor of a new wholesale house for St. Louis. The whispered word is that two prominent members of one of the smaller firms of this city will withdraw and start a new business. As neither of them has money, it is a question where the funds can be found.

Only one of the jobbing drug firms of this city is owned by capital furnished by outside men. All of the other firms have money owned by those who have grown up or old in the wholesale drug business, and it is counted as an advantage to the corporations.

CLAY W. JOHNSTON, who for years has been with the Collins Brothers' Drug Co., is now on the road for the Meyer Brothers' Drug Co.

Travelling men, like drug clerks, change around once in a while, but it is seldom that one gives up the trade for some other occupation. As a rule, the commercial travellers are supplied from the employees of the house, where they have learned the ways of the firm and business. When once on the road, they are liable to remain as long as they can see to write orders. Once in a while a travelling man buys a retail store and settles down, but such cases are rare. About one year ago a drug clerk left an employer and opened a new store in the neighborhood, to run him out of business. The young proprietor also declared that he would not stop short at such destruction, but would soon have the trade of a large territory and close up more than one store. To-day the young man is wondering how he can pay his rent, for trade is dull and money does not come in to keep up expenses. This is the history of more than one druggist who tells how he will demoralize business for his neighbors. If more energy had been given to business and less to talk about competitors, the case would have been different.

The St. Louis Club of Microscopists held an interesting meeting at the office of the president this month. The summer months do not weaken the vigor of the club.

CHICAGO.

THE trade of this city are extremely interested in an article which appeared in a St. Louis trade journal June 1st. It seems that the Kansas City Retail Druggists' Association took it upon themselves to investigate the subject of the cutting of prices by dry-goods and department stores, and to find, if possible, their source of supply. What they found and what they published is, as the article was headed, "Mighty Interesting Reading." Detectives were sent here to interview the buyers of these stores, and to purchase goods, in the name of some fictitious dry-goods firm, from our wholesale druggists. According to the article, every jobbing house but one is guilty. The lucky house which escaped their censure positively refused to have anything to do with selling a dry-goods store.

Tuesday, June 16th, a mass meeting of the retail trade was held at the Sherman House, and the wholesalers were asked to be present. All of them were represented, and the meeting was unusually large and interesting. Several druggists from adjoining cities were present. After the call to order, Prof. A. E. Ebert—who, by the way, has been especially active in this matter—arose and said that he understood that certain wholesalers had come prepared with statements and affidavits to show that they were unjustly accused of selling to cutters, and that if there were any of such present he hoped that they would let the past be buried, and would devote their attention to formulating some plan for future protection. He deprecated the raking-up of any old quarrels, and said that he hoped the meeting would be harmonious, and that much lasting good would be accomplished for both the jobber and the retailer.

Mr. Hugo Martin, however, objected to shutting off discussion as to the past acts of the wholesalers, and moved that they be allowed to explain matters and state what they intended to do hereafter.

Mr. Jamieson moved as a substitute that a committee of five be appointed to investigate the matter and report to this meeting, which substitute was laid on the table. The original motion of Mr. Martin was adopted.

Mr. Peter Van Schaack, for the wholesalers, then addressed the meeting. In the course of his remarks he denounced the article in the St. Louis paper as false in every particular, and read affidavits to show that his house had not done what the article claimed. He was followed by Mr. Lange, for Morrison, Plummer & Co., and Albert Hunt, for Fuller & Fuller Co. Mr. Dawson, of Robert Stevenson & Co., claimed that no one could truthfully say that his house had sold a single dry-goods cutter in the five years that they had been in business.

Mr. Jamieson then moved that the wholesalers be requested to stop the practice of selling to consumers at wholesale prices, which motion was carried unanimously amid great applause. On motion the chair then appointed the following committees:

To Ask Wholesalers to Desist from Selling to Cutters: Messrs. Bodeman, Ebert, and Jamieson.

To Present the Question to the Illinois Pharmaceutical Association: Messrs. Hugo Martin, Feldkamp, and Scherer.

To Bring About a Union of the Leading Associations of the West: Messrs. Bodeman, Blood, and McPherson.

To Keep an Eye on the Cutting Problem in Chicago: Messrs. Kerr, Obermann, and Dyche.

After transacting some routine business the meeting then adjourned.

It is reported that Matkin Bros., who recently opened a fine drug store on 43d street, are to occupy the store now nearing completion on the northwest corner of State and Van Buren streets. Elkins, the well-known shoe man, will be interested in it. Probably F. G. Secord, who has occupied the opposite corner for several years, is also interested in it, but in a different way.

The Alkaloidal Pharmacal Company has been organized with a capital stock of $50,000, for the manufacture of pharmaceutical and other preparations. The incorporators are Edwin Pynchon, P. S. Hayes, W. T. Thackeray, Stuart Johnson, and J. A. Robinson.

MR. F. K. STEARNS, son of the founder of the Detroit house of Frederick Stearns & Co., and president of the present stock company, is taking his first vacation in sixteen years, having gone to Europe for four months. It is not to be presumed, however, that the business of the establishment is suspended meanwhile.